

In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Original) A method comprising:
  - determining the average thickness of a film deposited over a substrate;
  - measuring at least one of the resistance and conductance of the film at a plurality of locations;
  - determining the sheet resistance at each of the plurality of locations;
  - calculating the average sheet resistance for the plurality of locations;
  - calculating the average resistivity using the average thickness of the film and the average sheet resistance; and
  - determining the thickness of at least one location of the plurality of locations using the average resistivity and the determined sheet resistance of the film at the location.
2. (Original) The method of Claim 1, wherein determining the average thickness of a film deposited over a substrate comprises:
  - depositing the film on the substrate;
  - determining the mass of the film material deposited on the substrate;
  - determining the film density of the film;
  - determining the surface area over which the film is deposited; and
  - calculating the average thickness using the mass of the film material, the film density, and the surface area.
3. (Original) The method of Claim 2, wherein determining the mass of the film material deposited on the substrate comprises:
  - taking a coulometer measurement during the deposition of the film on the substrate; and
  - using the coulometer measurement to determine the mass of the film material.
4. (Original) The method of Claim 1, wherein measuring at least one of the resistance and conductance of the film at a plurality of locations comprises:

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inducing an eddy current in the film deposited over the substrate at a first location; monitoring an electrical response modified by the induced eddy current to determine at least one of the resistance and conductance of the film at the first location; and repeating the acts of producing an eddy current and monitoring the electrical response for each of the plurality of locations.

5. (Original) The method of Claim 1, further comprising placing the substrate in contact with a thermal heat sink to control the temperature of the substrate.

6. (Withdrawn) The method of Claim 1, wherein measuring at least one of the resistance and conductance of the film at a plurality of locations is controlled for temperature stability, controlling for temperature stability comprises:

processing the substrate; and

waiting a predetermined time for the substrate temperature to approach the ambient temperature before beginning to measure at least one of the resistance and conductance of the film.

7. (Original) The method of Claim 1, wherein measuring at least one of the resistance and conductance of the film at a plurality of locations is controlled for temperature stability, controlling for temperature stability comprises:

repeatedly measuring at least one of the resistance and conductance of the film at a first location until the difference between the last two measurements are below a threshold; and

measuring at least one of the resistance and conductance of the film at the remaining locations.

8. (Withdrawn) The method of Claim 1, wherein measuring at least one of the resistance and conductance of the film at a plurality of locations is controlled for temperature stability, controlling for temperature stability comprises:

measuring the temperature of the substrate when measuring at least one of the resistance and conductance of the film at each location; and

adjusting the measured resistance or conductance from each of the plurality of locations to be referenced to the same temperature.

9. (Original) The method of Claim 4, wherein producing an eddy current in the film is performed at multiple excitation frequencies.

10. (Currently Amended) The method of Claim 1, wherein measuring at least one of the resistance and conductance of the film at a plurality of locations comprises measuring at least one of the total resistance and total conductance of the film and the substrate at a plurality of locations, the method further comprising:

measuring at least one of the resistance and conductance of the substrate at the plurality of locations prior to depositing the film on the substrate;

determining the resistance or conductance of the film using the measured at least one of the resistance and conductance of the substrate and the measured at least one of the total resistance and total conductance of the film ~~and film~~.

Claims 11-19 (Canceled)

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